ABSTRACT OF THE DISCLOSURE

A plasma processing reactor includes a chamber and a substrate support. The chamber includes an opening extending through a sidewall of the chamber. The substrate support is removably mounted within the chamber. The opening of the chamber is large enough to allow the substrate support to be removed from the chamber through the opening. A portion of a surface of the inner sidewall and the substrate support within the chamber has a coating. The coating is made of an electrically resistive material. The coating creates an impedance along the portion of the surface of the inner sidewall, which would otherwise carry a greater portion of the RF return current than the opposite side of the chamber. The coating also creates an impedance along the substrate support so that the density of the RF return current along the surface of the inner walls of the chamber is substantially more uniform.